

## MIFARE® EXAMPLES

Download link: [https://www.d-logic.net/code/nfc-rfid-reader-sdk/ufr-mf-examples-c\\_sharp.git](https://www.d-logic.net/code/nfc-rfid-reader-sdk/ufr-mf-examples-c_sharp.git)

You will see 3 different applications:

- Simplest - It reads card UID, card type, reads/writes linear data on card. It can also format card with transport keys (FF FF FF FF FF FF).
- Simple - same as simplest with added option of reader UI signals, reader type and serial number and card authentication option.
- Advance - same as simple with more authentication option, which will be explained further in the manual.

for work with MIFARE® cards.

### Simplest

uFr Simplest

Exit

<http://www.d-logic.net/nfc-rfid-reader-sdk/>

1

Card Type **0x21** UID Size **0x04**

Card UID **0x559D44F9**

2

FORMAT CARD

3

Write Data

FFFFFFFFFFFFFFFF

LINEAR WRITE

4

Read Data

FFFFFFFFFFFFFFFF????????????

LINEAR READ

Function Error	0x00	DL_OK
CARD STATUS	0x00	DL_OK
CONNECTED	0x00	DL_OK

1

### 1. Card type and UID

After putting a card on the reader you will be able to see card type, uid, and uid length in bytes, also **CARD\_STATUS** will be changed from **NO\_CARD** to **DL\_OK**.

### 2. Format card

If you click button 'FORMAT CARD', all data on the card will be erased and all sector keys will be set to **0xFFFFFFFFFFFF** - 6 bytes.

### 3. Linear write

For example, we will write **0xFFFFFFFFFFFFFFFF** - 10 bytes to card.  
Just write bytes into text box as shown on the picture and click "LINEAR WRITE".

### 4. Linear read

If you click button 'LINEAR READ' you will be able to see all data on the card as shown on the picture. After clicking 'FORMAT CARD' and erasing all data from card we are now able to see only 10 bytes that we have wrote in the LINEAR READ text box.

## Simple

uFr Simple

Exit

<http://www.d-logic.net/nfc-rfid-reader-sdk/>

1

Reader Type

0xD1380022

Card Type

0x21

UID Size

0x04

Reader Serial

0x18AC0

Card Serial

0x559D44F9

2

Light Mode

Long Green

Sound Mode

Short

READER UI SIGNAL

CONNECTED

0x00

DL\_OK

3

☒ AUTH 1A

☐ AUTH 1B

4

New Card Keys

New Reader Key

Key A

255255255255255

Key B

255255255255255

☐ Hex

FORMAT CARD

Sectors Formatted

5

Linear Read

Linear Write

Read Data

FFFFFFFF

Linear Address

0

Data Length

10

Read Bytes

10

LINEAR READ

Function Error:

0x00

DL\_OK

CARD STATUS:

0x00

DL\_OK

## 1. Reader type, reader serial, card type and UID

After opening application and putting card on the reader you will see reader type and serial number, card type, card uid and card uid size represented as hexadecimal numbers as shown on the picture.

## 2. Reader signalization

You can choose reader light and sound mode from combo boxes and after clicking 'READER UI SIGNAL' signalization will be visible and you can hear sound from speaker.

## 3. Authentication mode

You can choose between authentication with key A or authentication with key B by clicking on radio boxes in section number '3'.

## 4. Format

- By clicking 'FORMAT CARD' which is on 'New Card Keys' tab, all data on the card will be erased and all sector keys will be set to **0xFFFFFFFFFFFF** - 6 bytes.
- If you click on tab 'New Reader Key' you will be able to see button 'FORMAT READER KEYS' which will, after clicking, set all reader keys to **0xFFFFFFFFFFFF** - 6 bytes.

## 5. Linear read and Write

- On 'Linear Read' tab you have to choose linear address (where to start reading) and data length (how many bytes to read) and click 'LINEAR READ' button. After clicking you will be able to see card data in text box.
- On 'Linear Write' tab, you have to choose linear address (where to start writing) and input data into text box as shown in the picture below:

The screenshot shows the 'Linear Write' tab of the application. The 'Write Data' text box contains the hexadecimal value 'FFFFFFFFF'. Below this, the 'Linear Address' is set to '0' and the 'Data Length' is set to '10'. The 'Bytes Written' field displays '10'. A 'LINEAR WRITE' button is present. At the bottom, the status section shows 'Function Error: 0x00', 'CARD STATUS: 0x00', and 'DL\_OK'.

Data length will be automatically calculated. Bytes written shows a number of bytes that are written into card after clicking 'LINEAR WRITE' button.

## Advanced

uFr Advanced

FunctionsView All

1

<http://www.d-logic.net/nfc-rfid-reader-sdk/>

Reader Type

0xD1380022

Card Type

0x21

UID Size

0x4

Reader Serial

0x18AC0

Card Serial

0x559D44F9

2

Light Mode

Long Green

Sound Mode

Short

Reader UI Signal

Reader Reset

Soft Restart

3

Reader Key

Write User Data

255255255255255255

☐ Hex

Key Index

0

Reader Key Write

CONNECTED

0x00

DL\_OK

Linear Read/Write (AKM1,AKM2,PK)

4

☒ AUTH 1A

☐ AUTH 1B

Key Index

0

PK Key

255255255255255255

Linear Read

LinearRead\_AKM1/AKM2

LinearRead\_PK

Linear Write

LinearWrite\_AKM1/AKM2

5

Read Data

FFFFFFFF

Linear Address

0

Data Length

10

Read Bytes

10

READ

Function Error:

0x00

DL\_OK

CARD STATUS

0x00

DL\_OK

## **1. Reader type, reader serial, card type and UID**

After opening application and putting card on the reader you will see reader type and serial number, card type, card uid and card uid size represented as hexadecimal numbers as shown on the picture above.

## **2. Reader signalization and restart**

You can choose reader light and sound mode from combo boxes and after clicking 'READER UI SIGNAL' signalization will be visible and you can hear sound from speaker.

Clicking 'Reader Reset' will cause physical reset of reader communication port.

If you click on button 'Soft Restart' it will restart the reader by software. It sets all readers parameters to default values and close RF field which resets all the cards in the field.

## **3. Reader keys and data**

- In the 'Reader Key' tab you can see button 'Key Index' combo box in which you can choose between 0 - 31 key number to write into reader by clicking 'Reader Key Write' button.
- In the 'Write User Data' tab you can see text box with caption 'New User Data' in which you can type new user data and write it into reader by clicking 'Write User Data' button.

## **4. Authentication mode**

You can choose between authentication with key A or authentication with key B by clicking on radio boxes in section number '4'.

Also, you can choose key index from combobox or enter Provided key (PK) - 6 bytes. They will be used depending on which tab you click in section '5' for linear reading and writing cards data.

- Linear Read - using Key Index
- LinearRead\_AKM1/AKM2 - using auth mode (AUTH 1A or AUTH 1B)
- LinearRead\_PK - using Provided key
- Linear Write - using Key Index
- LinearWrite\_AKM1/AKM2 - using auth mode (AUTH1A or AUTH1B)
- LinearWrite\_PK - using Provided key

## 5. Functions:

If you click on “Functions” at the top of the application, you will see dropdown list with more options for work.



### 5.1 Linear read / Linear write

### 5.2 Block read / Block write

### 5.3 Block in sector read / Block in sector write

### 5.4 Value block read / Value block write

### 5.5 Value block increment / Value block decrement

### 5.6 Value block in sector read / Value block in sector write

### 5.7 Value block in sector increment / Value block in sector decrement

### 5.8 Sector trailer write

### 5.9 Linear format card

## 5.1 Linear read / Linear write

### Reading:

- On 'Linear Read' tab you have to choose key index and authentication mode (AUTH 1A or AUTH 1B) for reading which is in section '4', linear address (where to start reading) and data length (how many bytes to read) and click 'READ' button. After clicking you will be able to see card data in text box.
- On 'LinearRead\_AKM1/AKM2' tab you have to choose authentication mode (AUTH 1A or AUTH 1B) for reading which is in section '4', linear address (where to start reading) and data length (how many bytes to read) and click 'READ' button. After clicking you will be able to see card data in text box.
- On 'LinearRead\_PK' tab you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) for reading which is in section '4', linear address (where to start reading) and data length (how many bytes to read) and click 'READ' button. After clicking you will be able to see card data in text box.

### Writing:

- On 'Linear Write' tab, you have to choose key index and authentication mode (AUTH 1A or AUTH 1B) for writing which is in section '4', linear address (where to start writing) and input data into text box as shown in the picture below:

The screenshot shows a software interface with four tabs: 'Linear Read', 'LinearRead\_AKM1/AKM2', 'LinearRead\_PK', and 'Linear Write'. The 'Linear Write' tab is active, showing a sub-tab 'LinearWrite\_AKM1'. Below the tabs is a 'Write Data' text box containing the text 'FFFFFFFF'. At the bottom of the interface, there are four fields: 'Linear Address' with the value '0', 'Data Length' with the value '10', 'Bytes Written' with the value '10', and a 'WRITE' button.

Data length will be automatically calculated. Bytes written shows a number of bytes that are written into card after clicking 'WRITE' button.

- On 'LinearWrite\_AKM1/AKM2' tab, you have to choose authentication mode (AUTH 1A or AUTH 1B) for writing which is in section '4', linear address (where to start writing) and input data into text box. Data length will be automatically calculated. Bytes written shows a number of bytes that are written into card after clicking 'WRITE' button.
- On 'LinearWrite\_PK' tab, you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) for writing which is in section '4', linear address (where to start writing) and input data into text box. Data length will be automatically calculated. Bytes written shows a number of bytes that are written into card after clicking 'WRITE' button.

## 5.2 Block read / Block write



Now, we will explain Block Read/Write option.

**Block Read/Write (AKM1,AKM2,PK)**

1 ☒ AUTH 1A ☐ AUTH 1B Key Index 0 PK Key 255 255 255 255 255 255

Block Read Block Write

**Block Read**

Block Address 0 READ

Read Data ☒ Hex  
44CA0362EF080400015E31AA7

**BlockRead\_AKM1**

Block Address 0 READ

Read Data ☒ Hex  
44CA0362EF080400015E31AA7

**BlockRead\_AKM2**

Block Address 0 READ

Read Data ☒ Hex  
44CA0362EF080400015E31AA7

**BlockRead\_PK**

Block Address 0 READ

Read Data ☒ Hex  
44CA0362EF080400015E31AA7

2

#### Block read:

- In "Block Read" window you can choose block address and ASCII or hex data representation by checking 'Hex' checkbox. For successful reading, you have to choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) from section '1'. Block 0 data is shown at the picture above.
- In "BlockRead\_AKM1" window you can choose block address and ASCII or hex data representation by checking 'Hex' checkbox. For successful reading, you have to choose authentication mode (AUTH 1A or AUTH 1B) from section '1'. Block 0 data is shown at the picture above.
- In "BlockRead\_AKM2" window you can choose block address and ASCII or hex data representation by checking 'Hex' checkbox. For successful reading, you have to choose authentication mode (AUTH 1A or AUTH 1B) from section '1'. Block 0 data is shown at the picture above.
- In "BlockRead\_PK" window you can choose block address and ASCII or hex data representation by checking 'Hex' checkbox. For successful reading, you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section '1'. Block 0 data is shown at the picture above.

**Block Read/Write (AKM1,AKM2,PK)**

☒ **AUTH 1A** ☐ **AUTH 1B** Key Index  PK Key

Block Read Block Write

**Block Write**

Write Data ☒ Hex

Block Address

**BlockWrite\_AKM1**

Write Data ☒ Hex

Block Address

**BlockWrite\_AKM2**

Write Data ☒ Hex

Block Address

**BlockWrite\_PK**

Write Data ☒ Hex

Block Address

2

#### Block write:

- In "Block Write" window you can choose block address and ASCII or hex data input by checking 'Hex' checkbox. For successful writing, you have to enter 16 bytes of data in textbox, choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) from section '1' and then click "WRITE" button. Block 1 data writing is shown at the picture above.
- In "BlockWrite\_AKM1" window you can choose block address and ASCII or hex data input by checking 'Hex' checkbox. For successful writing, you have to enter 16 bytes of data in textbox, choose authentication mode (AUTH 1A or AUTH 1B) from section '1' and then click "WRITE" button. Block 1 data writing is shown at the picture above.
- In "BlockWrite\_AKM2" window you can choose block address and ASCII or hex data input by checking 'Hex' checkbox. For successful writing, you have to enter 16 bytes of data in textbox, choose authentication mode (AUTH 1A or AUTH 1B) from section '1' and then click "WRITE" button. Block 1 data writing is shown at the picture above.
- In "BlockWrite\_PK" window you can choose block address and ASCII or hex data input by checking 'Hex' checkbox. For successful writing, you have to enter 16 bytes of data in textbox, Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section '1' and then click "WRITE" button. Block 1 data writing is shown at the picture above.

### 5.3 Block in sector read / Block in sector write

**BlockInSector Read/Write (AKM1,AKM2,PK)**

**1** ☒ AUTH 1A ☐ AUTH 1B Key Index 0 PK Key 255 255 255 255 255 255

BlockInSector Read BlockInSector Write

**BlockInSector Read**

Sector Address 0 READ

Block Address 0

Read Data D?ib?

**BlockInSectorRead\_AKM1**

Sector Address 0 READ

Block Address 0

Read Data D?ib?

**BlockInSectorRead\_AKM2**

Sector Address 0 READ

Block Address 0

Read Data D?ib?

**BlockInSectorRead\_PK**

Sector Address 0 READ

Block Address 0

Read Data D?ib?

**2**

#### Block in sector read:

- In "BlockInSector Read" window you can choose sector address and block address. For successful reading, you have to choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) from section '1'. Block 0 in sector 0 data is shown at the picture above.
- In "BlockInSectorRead\_AKM1" window you can choose sector address and block address. For successful reading, you have to choose authentication mode (AUTH 1A or AUTH 1B) from section '1'. Block 0 in sector 0 data is shown at the picture above.
- In "BlockInSectorRead\_AKM2" window you can choose sector address and block address. For successful reading, you have to choose authentication mode (AUTH 1A or AUTH 1B) from section '1'. Block 0 in sector 0 data is shown at the picture above.
- In "BlockInSectorRead\_PK" window you can choose sector address and block address. For successful reading, you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section '1'. Block 0 in sector 0 data is shown at the picture above.

### BlockInSector Read/Write (AKM1,AKM2,PK)

**1** ☒ **AUTH 1A** ☐ **AUTH 1B**

Key Index 0

PK Key 255 255 255 255 255 255

BlockInSector Read

BlockInSector Write

**BlockInSector Write**

Write Data  

digital logic

Sector Address 0

WRITE

Block Address 1

**BlockInSectorWrite\_AKM2**

Write Data  

digital logic

Sector Address 0

WRITE

Block Address 1

BlockInSectorWrite\_AKM1

**BlockInSectorWrite\_AKM1**

Write Data  

digital logic

Sector Address 0

WRITE

Block Address 1

**BlockInSectorWrite\_PK**

Write Data  

digital logic

Sector Address 0

WRITE

Block Address 1

#### Block in sector write:

- In "BlockInSector Write" window you can choose sector address and block address and enter ASCII data For successful writing, you have to choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) from section '1'. Block 1 in sector 0 data writing is shown at the picture above.
- In "BlockInSectorWrite\_AKM1" window you can choose sector address and block address and enter ASCII data. For successful writing, you have to choose authentication mode (AUTH 1A or AUTH 1B) from section '1'. Block 1 in sector 0 data writing is shown at the picture above.
- In "BlockInSectorWrite\_AKM2" window you can choose sector address and block address and enter ASCII data. For successful writing, you have to choose authentication mode (AUTH 1A or AUTH 1B) from section '1'. Block 1 in sector 0 data writing is shown at the picture above.
- In "BlockInSectorWrite\_PK" window you can choose sector address and block address and enter ASCII data. For successful writing, you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section '1'. Block 1 in sector 0 data writing is shown at the picture above.

## VALUE BLOCKS

If you want to configure blocks for value, you have to change blocks access bits. Click on “Functions” dropdown list at the top of the application and then select “Linear Format Card” option.

The screenshot shows the 'Linear Format Card (AKM1, AKM2, PK)' application window. At the top, there are radio buttons for 'AUTH 1A' (selected) and 'AUTH 1B', a 'Key Index' dropdown set to '0', and a 'PK Key' field with six '255' values. Below this are two sections for 'KEY A' and 'KEY B', each with a row of six '255' values and a 'Hex' checkbox. A tab bar at the bottom of the top section shows 'LinearFormatCard' (selected), 'LinearFormatCard\_AKM1', 'LinearFormatCard\_AKM2', and 'LinearFormatC'. The main area contains 'Block Access Bits' and 'Sector Trailer Access Bits' dropdowns, a 'Sector Trailer Byte 9' input field, a large 'FORMAT' button, and a 'Sectors Formatted' progress bar. The bottom status bar shows 'Function Error:', 'CARD STATUS' with '0x00', and 'DL\_OK'.

For configuring blocks as value blocks please refer to:  
<https://www.d-logic.net/code/nfc-rfid-reader-sdk/ufr-doc/blob/master/uFR%20Series%20NFC%20Reader%20API.pdf>  
and look for “block access bits” and “sector trailer access bits”.

### 5.4 Value block read / Value block write



### ValueBlock Read/Write(AKM1,AKM2,PK)

1
☒ **AUTH 1A**  
 ☐ **AUTH 1B**  
 Key Index 0  
 PK Key 255 255 255 255 255 255

valueBlock Read
ValueBlock Write

#### ValueBlock Read

Block Address 1

READ

Read Value 0
Value Address 15

#### ValueBlockRead\_AKM1

Block Address 1

READ

Read Value 0
Value Address 15

#### ValueBlockRead\_AKM2

Block Address 1

READ

Read Value 0
Value Address 15

#### ValueBlockRead\_PK

Block Address 1

READ

Read Value 0
Value Address 15

#### Value block read:

- In “ValueBlock Read” window you have to choose block address, appropriate key index and authentication mode (AUTH 1A or AUTH 1B) which are in section ‘1’, then click “READ” button. Block 1 value reading is shown above
- In “ValueBlockRead\_AKM1” window you have to choose block address and authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “READ” button. Block 1 value reading is shown above
- In “ValueBlockRead\_AKM2” window you have to choose block address and authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “READ” button. Block 1 value reading is shown above.
- In “ValueBlockRead\_PK” window you have to choose block address and you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section ‘1’, then click “READ” button. Block 1 value reading is shown above.

**ValueBlock Read/Write(AKM1,AKM2,PK)**

**1** ☐ AUTH 1A ☒ AUTH 1B

Key Index

PK Key

ValueBlock Read

ValueBlock Write

**ValueBlock Write**

Write Value

Value Address

Block Address

**ValueBlockWrite\_AKM1**

Write Value

Value Address

Block Address

**ValueBlockWrite\_AKM2**

Write Value

Value Address

Block Address

**ValueBlockWrite\_PK**

Block Address

Value Address

Write Value

2

#### Value block write:

- In “ValueBlock Write” you have to enter value, value address, block address and choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) which are in section ‘1’, then click “WRITE” button. Block 1 value writing is shown above.
- In “ValueBlockWrite\_AKM1” you have to enter value, value address, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “WRITE” button. Block 1 value writing is shown above.
- In “ValueBlockWrite\_AKM2” you have to enter value, value address, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “WRITE” button. Block 1 value writing is shown above.
- In “ValueBlockWrite\_PK” you have to enter value, value address, block address and you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section ‘1’, then click “WRITE” button. Block 1 value writing is shown above.

## 5.5 Value block increment / Value block decrement

Value block increment:

**ValueBlock Increment/Decrement (AKM1,AKM2,PK)**

1 ☐ AUTH 1A ☒ AUTH 1B Key Index 0 PK Key 255 255 255 255 255 255

ValueBlock Increment ValueBlock Decrement

**ValueBlock Increment**

Increment Value 10

Block Address 1

INCREMENT

**ValueBlock Increment AKM1**

Increment Value 10

Block Address 1

INCREMENT

**ValueBlock Increment AKM2**

Increment Value 10

Block Address 1

INCREMENT

**ValueBlock Increment PK**

Increment Value 10

Block Address 1

INCREMENT

2

- In “ValueBlock Increment” window you have to enter increment value, block address, and choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) which are in section ‘1’, then click “INCREMENT” button. Block 1 value incrementing is shown above.
- In “ValueBlock Increment AKM1” window you have to enter increment value, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “INCREMENT” button. Block 1 value incrementing is shown above.
- In “ValueBlock Increment AKM2” window you have to enter increment value, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “INCREMENT” button. Block 1 value incrementing is shown above.
- In “ValueBlock Increment PK” window you have to enter increment value, block address and you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 decimal) which is in section ‘1’, then click “INCREMENT” button. Block 1 value incrementing is shown above.



Value block decrement:

**ValueBlock Increment/Decrement (AKM1,AKM2,PK)**

1 ☐ AUTH 1A ☒ AUTH 1B Key Index 0 PK Key 255 255 255 255 255 255

ValueBlock Increment ValueBlock Decrement

**ValueBlock Decrement**

Decrement Value 10

Block Address 1

DECREMENT

**ValueBlockDecrement\_AKM1**

Decrement Value 10

Block Address 1

DECREMENT

**ValueBlockDecrement\_AKM2**

Decrement Value 10

Block Address 1

DECREMENT

**ValueBlockDecrement\_PK**

Decrement Value 10

Block Address 1

DECREMENT

2

- In “ValueBlock Decrement” window you have to enter decrement value, block address, and choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) which are in section ‘1’, then click “DECREMENT” button. Block 1 value decrementing is shown above.
- In “ValueBlock Decrement AKM1” window you have to enter decrement value, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “DECREMENT” button. Block 1 value decrementing is shown above.
- In “ValueBlock Decrement AKM2” window you have to enter decrement value, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “DECREMENT” button. Block 1 value decrementing is shown above.
- In “ValueBlock Decrement PK” window you have to enter decrement value, block address and you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section ‘1’, then click “INCREMENT” button. Block 1 value decrementing is shown above.

## 5.7 Value block in sector increment / Value block in sector decrement

Value block in sector increment:

**ValueBlockInSector Increment/Decrement(AKM1,AKM2,PK)**

☒ **AUTH 1A** ☐ **AUTH 1B** Key Index **0** PK Key **255** **255** **255** **255** **255** **255**

ValueBlockInSector Increment ValueBlockInSector Decrement

**ValueBlockInSector Increment**

Increment Value **10**

Sector Address **0** **INCREMENT**

Block Address **1**

**ValueBlockInSectorIncrementAKM1**

Increment Value **10**

Sector Address **0** **INCREMENT**

Block Address **1**

**ValueBlockInSectorIncrementAKM2**

Increment Value **10**

Sector Address **0** **INCREMENT**

Block Address **1**

**ValueBlockInSectorIncrementPK**

Increment Value **10**

Sector Address **0** **INCREMENT**

Block Address **1**

- In “ValueBlockInSector Increment” window you have to enter increment value, sector address, block address and choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) which are in section ‘1’, then click “INCREMENT” button. Block 1 in sector 0 value incrementing is shown above.
- In “ValueBlockInSector Increment AKM1” window you have to enter increment value, sector address, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “INCREMENT” button. Block 1 in sector 0 value incrementing is shown above.
- In “ValueBlockInSector Increment AKM2” window you have to enter increment value, sector address, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “INCREMENT” button. Block 1 in sector 0 value incrementing is shown above.
- In “ValueBlockInSector Increment PK” window you have to enter increment value, sector address, block address you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section ‘1’, then click “INCREMENT” button. Block 1 in sector 0 value incrementing is shown above.

Value block in sector decrement:

ValueBlockInSector Increment/Decrement(AKM1,AKM2,PK)									
1 <input checked="" type="radio"/> AUTH 1A <input type="radio"/> AUTH 1B		Key Index	0	PK Key	255	255	255	255	255
ValueBlockInSector Increment					ValueBlockInSector Decrement				
<b>ValueBlockInSector Decrement</b> Decrement Value <input type="text" value="10"/> Sector Address <input type="text" value="0"/> <input type="text" value="DECREMENT"/> Block Address <input type="text" value="1"/>					<b>ValueBlockInSectorDecrementAKM1</b> Decrement Value <input type="text" value="10"/> Sector Address <input type="text" value="0"/> <input type="text" value="DECREMENT"/> Block Address <input type="text" value="1"/>				
<b>ValueBlockInSectorDecrementAKM2</b> Decrement Value <input type="text" value="10"/> Sector Address <input type="text" value="0"/> <input type="text" value="DECREMENT"/> Block Address <input type="text" value="1"/>					<b>ValueBlockInSectorDecrementPK</b> Decrement Value <input type="text" value="10"/> Sector Address <input type="text" value="0"/> <input type="text" value="DECREMENT"/> Block Address <input type="text" value="1"/>				

- In “ValueBlockInSector Decrement” window you have to enter decrement value, sector address, block address and choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) which are in section ‘1’, then click “DECREMENT” button. Block 1 in sector 0 value decrementing is shown above.
- In “ValueBlockInSector Decrement AKM1” window you have to enter decrement value, sector address, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “DECREMENT” button. Block 1 in sector 0 value decrementing is shown above.
- In “ValueBlockInSector Decrement AKM2” window you have to enter decrement value, sector address, block address and choose authentication mode (AUTH 1A or AUTH 1B) which is in section ‘1’, then click “DECREMENT” button. Block 1 in sector 0 value decrementing is shown above.
- In “ValueBlockInSector Decrement PK” window you have to enter decrement value, sector address, block address you have to enter Provided key (6 bytes - 0xFFFFFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section ‘1’, then click “DECREMENT” button. Block 1 in sector 0 value decrementing is shown above.

## 5.8 Sector trailer write

**Sector Trailer Write(AKM1,AKM2,PK)**

**1** ☒ AUTH 1A ☐ AUTH 1B Key Index 0 PK Key 255 255 255 255 255 255

**KEY A** 255 255 255 255 255 255 ☐ Hex

**KEY B** 255 255 255 255 255 255 ☐ Hex **2**

SectorTrailerWrite SectorTrailerWrite\_AKM1 SectorTrailerWrite\_AKM2 SectorTrailerWrite\_PK

Addressing Mode  Trailer Access Bits

Block or Sector Address  Trailer Byte 9

Access Bits 0

Access Bits 1

Access Bits 2

**WRITE** **3**

- In "SectorTrailerWrite" tab you have to enter new key A and new key B which are in section '2', choose addressing mode (0 - absolute or 1 - relative), sector address, block 0 access bits, block 1 access bits, block 2 access bits, sector trailer access bits, sector trailer byte 9 which are in section '3' and choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) which is in section '1', then click "WRITE" button.
- In "SectorTrailerWrite\_AKM1" tab you have to enter new key A and new key B which are in section '2', choose addressing mode (0 - absolute or 1 - relative), sector address, block 0 access bits, block 1 access bits, block 2 access bits, sector trailer access bits, sector trailer byte 9 which are in section '3' and choose authentication mode (AUTH 1A or AUTH 1B) which is in section '1', then click "WRITE" button.
- In "SectorTrailerWrite\_AKM2" tab you have to enter new key A and new key B which are in section '2', choose addressing mode (0 - absolute or 1 - relative), sector address, block 0 access bits, block 1 access bits, block 2 access bits, sector trailer access bits, sector trailer byte 9 which are in section '3' and choose authentication mode (AUTH 1A or AUTH 1B) which is in section '1', then click "WRITE" button.
- In "SectorTrailerWrite\_PK" tab you have to enter new key A and new key B which are in section '2', choose addressing mode (0 - absolute or 1 - relative), sector address, block 0 access bits, block 1 access bits, block 2 access bits, sector trailer access bits, sector trailer byte 9 which are in section '3' and you have to enter Provided key (6 bytes -

0xFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section '1', then click "WRITE" button.

## 5.9 Linear format card

**Linear Format Card (AKM1,AKM2,PK)**

1 ☒ **AUTH 1A** ☐ **AUTH 1B** Key Index 0 PK Key 255 255 255 255 255 255

**KEY A** 255 255 255 255 255 255 ☐ Hex

**KEY B** 255 255 255 255 255 255 ☐ Hex 2

LinearFormatCard LinearFormatCard\_AKM1 LinearFormatCard\_AKM2 LinearFormatCard\_PK

Block Access Bits  Sector Trailer Access Bits  **FORMAT**

Sector Trailer Byte 9  Sectors Formatted  3

- In "LinearFormatCard" tab you have to enter new key A and new key B which are in section '2', block access bits, sector trailer access bits and sector trailer byte 9 which are in section '3' and choose appropriate key index and authentication mode (AUTH 1A or AUTH 1B) which is in section '1', then click "FORMAT" button.
- In "LinearFormatCard\_AKM1" tab you have to enter new key A and new key B which are in section '2', block access bits, sector trailer access bits and sector trailer byte 9 which are in section '3' and choose authentication mode (AUTH 1A or AUTH 1B) which is in section '1', then click "FORMAT" button.
- In "LinearFormatCard\_AKM2" tab you have to enter new key A and new key B which are in section '2', block access bits, sector trailer access bits and sector trailer byte 9 which are in section '3' and choose authentication mode (AUTH 1A or AUTH 1B) which is in section '1', then click "FORMAT" button.
- In "LinearFormatCard\_PK" tab you have to enter new key A and new key B which are in section '2', block access bits, sector trailer access bits and sector trailer byte 9 which are in section '3' and you have to enter Provided key (6 bytes - 0xFFFFFFFF is default hex or 255 255 255 255 255 255 decimal) which is in section '1', then click "FORMAT" button.

